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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,664	11/25/2003	Tetsuya Fukuda	9281-4714	5952

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EXAMINER

PETKOVSEK, DANIEL J

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/721,664

Applicant(s)

FUKUDA ET AL

Examiner

Daniel J. Petkovsek

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on amendment filed March 10, 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 13-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 13, 14, 16-20, and 22-26 is/are rejected.
- 7) ☒ Claim(s) 15, 21 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This office action is in response to the amendment filed March 10, 2006. In accordance with the amendment, claim 1 has been amended, claims 11 and 12 have been formally canceled, while new claims 13-27 have been added. Claims 1-10 and 13-27 are pending.

Claim Objections

1. Claim 27 is objected to because of the following informalities: the claim is dependent upon itself. It is assumed for the sake of expediting prosecution that the claim should be dependent upon claim 26. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 8-10, 14, 17-19, and 22-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Gotoh et al. U.S.P. No. 6,847,424 B2.

Gotoh et al. U.S.P. No. 6,847,424 B2 teaches (ABS, Figs. 18-21, 24; column 19, line 19 through column 20, line 18; column 26, line 29 through column 27, line 10) an anti-reflective structure comprising many micro-holes 308c in material 308, each micro-hole having an opening at first surface and a bottom facing a second surface opposite to the first surface, each hole extending from the opening to the bottom (of the hole), the first surface adjacent the micro hole being substantially planar, the shape of the holes having the intended result of preventing

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incident light from being reflected in the structure, which clearly, fully meets Applicant's *claimed* limitations.

Regarding claim 8, a reflective structure (plate structure to reflect) with micro-grooves in order to reflect can be placed opposite the first surface (also see Figs. 10, 11, 14, 23a, 27; column 28, lines 17-49; in particular column 28 "When the light is scattered in the liquid-crystal layer, the *light reflects* in the liquid-crystal layer").

Regarding claims 9, 10, 22, and 23, the device of Gotoh et al. '424 can be used in LCD units and comprises elements for guiding light, as well as having a liquid crystal layer facing the substrate element.

Regarding claim 14, the second surface nearby is substantially planar.

Regarding claims 17 and 24, the grooves of Figs. 10, 11, and 14 form a "wedge" type shape, contacting at an angle.

Regarding claim 18, the adjacent surface is substantially planar.

Regarding claims 19 and 25, the structure is integral.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-7, 13, 16, 20 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gotoh et al. U.S.P. No. 6,847,424 B2.

Gotoh et al. U.S.P. No. 6,847,424 B2 teaches (ABS, Figs. 18-21, 24; column 19, line 19 through column 20, line 18; column 26, line 29 through column 27, line 10) an anti-reflective structure comprising many micro-holes 308c in material 308, each micro-hole having an opening at first surface and a bottom facing a second surface opposite to the first surface, each hole extending from the opening to the bottom (of the hole), the first surface adjacent the micro hole being substantially planar, the shape of the holes having the intended result of preventing incident light from being reflected in the structure. Gotoh et al. '424 does not *explicitly* teach the claimed properties of the micro-holed structure of claims 2-6.

Regarding claims 2-6, a person having ordinary skill in the art at the time the invention was made would have found obvious (in view of the art to Gotoh et al. '424) the claimed limitations for the following reasons:

For claim 2, although not explicitly disclosed (reference is silent), a person having ordinary skill would have recognized having the holes 308c take up 70-85% of the area of the opening to straight-line distance for the purpose of improving/modifying the amount of light that passes through the anti-reflective structure. The number of holes in the reference is not explicit, and the criticality of such has not been disclosed in the device limitations.

For claims 3 and 13, although not explicitly disclosed (reference is silent), a person having ordinary skill would have recognized having as low reflectance as possible in the gap (possibly air), being less than 1% reflectance for the purpose of decreasing the amount of reflection (or micro holes having a pitch of less than about one half of the wavelength of light incident thereon). A person having ordinary skill would have recognized that reflection was not desired, and the smaller reflectance, the more improved the light guiding device would function

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(as well as the proper functionality to be enabled if the pitch of the micro holes as designated).

Applicant has not stated any criticality of having less than 1% reflectance or certain wavelength pitch, other than that is known in the art (to inhibit unwanted reflection).

For claims 4-6, although not explicitly disclosed (reference is silent), a person having ordinary skill would have recognized any shaped arrangement of the holes and staggering of the holes to create different light patterns in the LCD system for the purpose of creating improved workability of the light manipulations. Applicant has not stated any criticality of having the shapes or staggering the holes over the prior art of Gotoh et al. '424. Regarding claim 16, an array is present, and any portion or shape of a honeycomb can be compared. A straight-line array can meet the broad limitation of a "honeycomb".

Regarding claims 7, 20, and 26, anti-reflective films are well known in the art to protect components and also to allow to little-to-no reflection in the optical system. A person having ordinary skill in the art at the time the invention was made would have recognized the use of anti-reflective films for the purpose of decreasing optical error (by protecting the functional components). This limitation is viewed as non-critical to the functioning of the anti-reflective structure.

Allowable Subject Matter

6. Claims 15, 21, and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The relevant prior art of record does not teach or reasonably suggest the further limitations including.

Response to Arguments

7. Applicant's arguments, see amendment with remarks in regards to the Umemoto '315 reference, filed March 10, 2006, with respect to the applicability of the particular reference have been fully considered and are persuasive. The rejections of claims 1 and 8-10 to the Umemoto '315 reference have been withdrawn.

8. Applicant's arguments filed March 10, 2006 in respect to the Gotoh et al. '424 reference have been fully considered but they are not persuasive.

Applicant traverses the rejection to the Gotoh et al. '424 reference to independent claim 1 by stating that the surface *adjacent to* the majority of the conical sections 308c is curved (see page 5, lines 22-26). The Examiner respectfully disagrees with this assertion, for a number of reasons. First, the term "adjacent" could be interpreted to mean "nearby" or "close to". Clearly, straight/planar surface 318 is "nearby" or "close to" the micro holes. Second, the term "substantially planar" could broadly be interpreted as "lying in a plane". A substantial portion of the elements adjacent to the curves "lie in a plane". For either or both of the preceding reasons, Gotoh '424 still meets the *claimed* limitations of claim 1.

Applicant traverses the rejection to the Gotoh et al. '424 reference to independent claim 8 by stating that Gotoh '424 does not anticipate a light guide containing both an anti-reflection structure and a reflective structure (page 6, lines 10-14). The Examiner respectfully disagrees with this assertion. The term "second surface" is broad enough to encompass any reflective material in an upward (or downward) direction. There are numerous embodiments in which reflective elements are used in combination with the anti-reflective structure in an "integral"

manner as disclosed in figures 18-21 (see Figs. 10, 11, 14, 23a, 27, etc.). The structure as shown in its simplest form by Figure 18 can be used with reflecting elements.

9. Regarding any 35 U.S.C. 103 (a) rejections, the Examiner has met all requirements of the MPEP as making rejections as such.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Petkovsek whose telephone number is (571) 272-2355. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Daniel Retkovsek
May 20, 2006


AKM ENAYET ULLAH
PRIMARY EXAMINER